

AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1-34. (Cancelled)

35. (New) A refrigeration system comprising:

an evaporator pressure regulator, an expansion valve, an evaporator and a compressor in fluid communication through a refrigeration circuit, wherein said expansion valve controls refrigerant superheat through said evaporator;

a sensor operable to measure a parameter of said refrigeration circuit; and

a controller operable to control said evaporator pressure regulator independent of refrigerant superheat control by said expansion valve, wherein said controller controls a suction pressure for said refrigeration circuit based upon said measured parameter.

36. (New) The system of Claim 35, wherein said controller adaptively controls said suction pressure of the refrigeration circuit through control of a valve position of said evaporator pressure regulator.

37. (New) The system of Claim 35, wherein said controller adaptively controls said suction pressure until said evaporator pressure regulator is substantially one hundred percent open.

38. (New) A refrigeration system comprising:

an evaporator pressure regulator, an expansion valve, an evaporator, and a compressor in communication through a refrigeration circuit, said expansion valve modulating superheat of refrigerant supplied to said evaporator;

a sensor operable to measure a parameter from said circuit; and

a controller operable to control said evaporator pressure regulator based upon said measured parameter to achieve a highest possible suction pressure.

39. (New) The system of Claim 38, wherein said controller controls said suction pressure until said evaporator pressure regulator is substantially one hundred percent open.

40. (New) The system of Claim 38, wherein said controller adaptively controls said suction pressure for said refrigeration circuit.

41. (New) The system of Claim 40, wherein said controller adaptively controls said suction pressure until said evaporator pressure regulator is substantially one hundred percent open.

42. (New) In a refrigeration system, a controller operable to control an evaporator pressure regulator independent of an expansion valve to control a suction pressure of a refrigeration circuit by determining a change in a measured parameter and updating a set point based upon said change in said measured parameter.

43. (New) The controller of Claim 42, further operable to control the suction pressure of said refrigeration circuit until said evaporator pressure regulator is substantially one hundred percent open.

44. (New) The controller of Claim 42, wherein said measured parameter is temperature.

45. (New) The controller of Claim 44, wherein said measured parameter is an average of multiple temperature measurements.

46. (New) A method for refrigeration system control, comprising:
operating an electronic evaporator pressure regulator to control a suction pressure of a refrigeration circuit;
operating an expansion valve to control a refrigerant superheat;
measuring a parameter from said circuit by a sensor in communication with said circuit; and
controlling said electronic evaporator pressure regulator to achieve a highest possible suction pressure based upon said measured parameter.

47. (New) The method of Claim 46, wherein said measuring a parameter from said circuit by said sensor includes measuring a refrigerant pressure.

48. (New) The method of Claim 47, wherein said controlling includes controlling said evaporator pressure regulator based upon said refrigerant pressure measurement.

49. (New) The method of Claim 46, wherein said measuring includes measuring temperature.

50. (New) The method of Claim 49, wherein said controlling said electronic pressure regulator includes averaging said temperature measurement.

51. (New) The method of Claim 50, further comprising determining an error value between said temperature measurement and a circuit temperature set point.

52. (New) The method of Claim 51, further comprising determining a percent value opening for said evaporator pressure regulator based upon said error value and electronically adjusting a valve position of said evaporator pressure regulator.

53. (New) A method for controlling a refrigeration system having a compressor rack and a plurality of circuits including a lead circuit, each circuit having at least one evaporator, and an expansion valve associated therewith, the method comprising:

positioning an electronic evaporator pressure regulator in communication with each circuit;

positioning a sensor in communication with each circuit; and
providing a plurality of compressors forming a compressor rack;
wherein said electronic evaporator pressure regulator may be operated to control a temperature in the at least one refrigeration case by controlling each said electronic evaporator pressure regulator to achieve a highest possible suction pressure based upon parameters measured by said sensor associated with each said circuit.

54. (New) A method for controlling a refrigeration system, comprising:
detecting a temperature or pressure value;
comparing said detected value to a set point value; and
updating an evaporator pressure regulator valve position for a refrigeration circuit based on said comparison to control a suction pressure of said refrigeration circuit independently of an expansion valve.

55. (New) The method of Claim 54, wherein said comparing includes PID control.

56. (New) The method of Claim 54, wherein said comparing includes determining an error value and said updating includes adjusting a valve position of said evaporator pressure regulator.

57. (New) In a refrigeration system having a plurality of refrigeration circuits, a controller operable to control an evaporator pressure regulator to achieve a highest

possible suction pressure for a lead circuit of said plurality of refrigeration circuits based upon a sensed parameter of said lead circuit.

58. (New) The controller of Claim 57, further operable to control the suction pressure of said refrigeration circuit until said evaporator pressure regulator is substantially one hundred percent open.

59. (New) The controller of Claim 57, wherein said measured parameter is temperature.

60. (New) The controller of Claim 59, wherein said measured parameter is an average of multiple temperature measurements.